

Message Text

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TO SECSTATE WASHDC 9256

INFO USDOC WASHDC

AMEMBASSY ROME

AMCONSUL MILAN

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USDOC ATTN DOE/CS, W. CORCORAN

MILAN FOR TRADE CENTER

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TAGS: BEXP, XG, XF, ENRG, TECH

SUBJ: MEDITERRANEAN BASIN ENERGY CONSERVATION

TECHNOLOGY EXHIBITION AND CONFERENCE, U.S. TRADE CENTER,

MILAN, MARCH 26-30, 1979

REF: STATE 150425

1. BASED ON DESK SURVEY REQUESTED REFTEL, ANSWERS TO
REFTEL QUESTIONS ONE THRU FIVE FOLLOW. QUESTIONS ARE
REPEATED FOR CONVENIENCE:

Q. 1. WHICH OF THE HOST COUNTRY'S COMMERCIAL AND INDUSTRIAL
SECTORS ARE THE MAJOR ENERGY USERS?

ANSWER: TRANSPORTATION IS THE LARGEST ENERGY USER FOLLOWED
BY STEEL MILL OPERATIONS. THREE MILLS ARE LOCATED IN
ISFAHAN; TWO OF THESE ARE PRODUCERS WHILE THE THIRD
WILL BE IN OPERATION IN NEAR FUTURE. FIVE OTHER
GAS-STEEL MILLS ARE PLANNED. THESE WILL BE LOCATED
IN AHWAZ, BADERABAS, MASHAD, ISFAHAN AND BUSHEHR.

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ONCE OPERATIONAL, FIVE YEARS FROM NOW, STEEL-MAKING
WILL BECOME THE PRIME ENERGY USER. PETROCHEMICALS
ARE NEXT HIGHEST ENERGY CONSUMER FOLLOWED BY CEMENT
PRODUCTION; TWELVE FACTORIES ARE OPERATIONAL NOW
WITH A DOUBLING EXPECTED IN FIVE YEARS. OVENS ARE
ALL ELECTRICALLY HEATED. REPRESENTATIVE 4,000 TON
PER DAY CEMENT FACTORY AT ABZEK USES 22 MEGAWATTS.

AUTO MANUFACTURE IS NEXT LARGEST ENERGY CONSUMER IN IRAN, WITH IRAN NATIONAL TAKING 70 PERCENT OF MARKET OR PRODUCTION RATE OF NINETY THOUSAND PEYKANS PER YEAR. IRAN NATIONAL IS FOLLOWED BY SAIPA WHICH MAKES RENAULTS AND SMALL CITROENS, THEN GENERAL MOTORS. CITROEN IS LEAST EXPENSIVE CAR IN IRAN, COSTING APPROXIMATELY DOLLARS THREE THOUSAND FOUR HUNDRED. TRUCK AND BUS MANUFACTURE FOLLOWS AS NEXT LARGEST ENERGY USER. THIS INCLUDES MERCEDES, MAZDA, DATSUN, VOLVO, AND MACK.

Q.2. WHAT ARE THE PRIMARY FORMS OF ENERGY CONSUMED BY EACH SECTOR IDENTIFIED FOR Q.1. AND TO WHAT USE IS THE ENERGY APPLIED....WHAT IS THE AVERAGE ANNUAL CONSUMPTION OF EACH ENERGY FORM BY EACH SECTOR?
ANSWER: THE PRIMARY FORMS OF ENERGY CONSUMED BY EACH SECTOR ARE EITHER REELECTRICITY OR OIL, WITH THREE-FOURTHS OF ELECTRICITY BEING GENERATED FROM OIL AND NATURAL GAS AND ONE-FOURTH FROM HYDROELECTRIC SOURCES. THERMAL GENERATING UNITS OWNED BY THE MINISTRY OF ENERGY CONSUMED 2135 MILLION LITERS OF OIL AND 1533 MILLION CUBIC METERS OF NATURAL GAS IN 1977. THE NATIONAL ELECTRICAL CAPACITY IS 6,000 MWE, NEARLY FIFTY PERCENT OF WHICH IS APPLIED TO INDUSTRIAL CONSUMPTION AND ADDITIONAL 45 PERCENT TO COMBINED RESIDENTIAL AND COMMERCIAL USES. BREAKDOWN BY CATEGORIES GIVEN IN ANSWER TO Q.1. NOT DIRECTLY AVAILABLE. TOTAL ELECTRIC POWER GENERATED IN UNCLASSIFIED

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1976 WAS 17,311 MILLION KWH, INCLUDING 3,000 MILLION KWH BY PRIVATE SECTOR. ANNUAL PUBLIC SECTOR SALES (AFTER SYSTEM LOSSES) IN 1976 OF ELECTRICITY BY MAJOR SECTOR FOLLOWS:
RESIDENTIAL: 2,620 MILLION KWH (22.3PERCENT); COMMERCIAL: 2,639 MILLION KWH (22.5PERCENT); INDUSTRIAL: 5,575 MILLION KWH (47.5PERCENT); AGRICULTURAL: 371 MILLION KWH (3.1PERCENT); STREET LIGHTING: 412 MILLION KWH (3.5PERCENT); OTHER: 117 MILLION KWH (1.0PERCENT). ELECTRICITY GENERATION BY SOURCE AND RELATIVE CONTRIBUTION FOLLOW FOR 1976 AND 1977:

	1976 (PERCENT)	1977(PERCENT)
HYDRO	28.0	26.7
STEAM	59.5	52.2
GAS TURBINE	7.9	16.2
DIESEL	4.6	5.0

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Q.3. DISCUSS BY SECTOR EFFECTIVENESS OF EXISTING PLANTS FOR CONVERTING ENERGY FORMS TO USEFUL POWER. WHAT IS THE COST OF POWER PRODUCED?
ANSWER: EFFICIENCY OF EXISTING PLANTS IS COMPARABLE TO THAT IN WESTERN COUNTRIES. THERE IS VERY LITTLE TECHNOLOGY INNOVATION IN IRAN APPLIED TO PLANT MANUFACTURE AND OPERATION. PLANTS ARE OF WESTERN EUROPEAN OR U.S. DESIGN AND MANUFACTURE, CONSEQUENTLY OPERATIONAL PERFORMANCE (WITH EXCEPTION OF MAINTENANCE AND REPAIR OR EXCESSIVE OUTAGES) IS NOT VERY DIFFERENT FROM THAT IN OTHER COUNTRIES UTILIZING THESE PRODUCTS. IN 1967, MINISTRY OF ENERGY THERMAL PLANTS HAD AN AVERAGE THERMAL EFFICIENCY OF ABOUT 22.7 PERCENT. IN 1976 THE THERMAL EFFICIENCY WAS 30.2 PERCENT COMPARED WITH 30.6 PERCENT THE PREVIOUS YEAR. THIS REDUCTION IN AVERAGE THERMAL EFFICIENCY WAS DUE TO INCREASED USE OF GAS TURBINE UNITS WHICH HAVE HIGHER HEAT RATES THAN THOSE OF STEAM UNITS. AVERAGE COST OF POWER PRODUCED IS ABOUT DOLLARS ELEVEN HUNDRED PER KILOWATT INSTALLED, IN CURRENT DOLLARS. THIS IS APPROXIMATELY 15-20 PERCENT MORE EXPENSIVE
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THAN IN THE UNITED STATES. THIS AVERAGE COST EXCLUDES ANTICIPATED COSTS FOR NUCLEAR POWER GENERATION, WHICH WILL BE CONSIDERABLY GREATER. ON NUCLEAR SIDE, SOME GOVERNMENT OFFICIALS ARE BEGINNING TO ASK WHY IRAN SHOULD BECOME THE FIRST COUNTRY, DURING NEXT DECADE, TO HAVE GREATER THAN FIFTY PERCENT OF ITS ELECTRIC ENERGY PRODUCED FROM

NUCLEAR RESOURCES WHILE OTHERS ADHERE TO THE RATIONAL OF CONSERVATION AND BROADENED INDUSTRIAL BASE.

1.4. DISCUSS EACH SECTOR'S WILLINGNESS AND ABILITY TO ADAPT NEW CONSERVATION TECHNOLOGY. ESTIMATE 1977 INVESTMENTS ACTUALLY MADE IN SUCH EQUIPMENT. WHAT IS THE RATE OF CAPITAL FORMATION; WHAT IS THE RATE OF ASSET REPLACEMENT? WHAT RATE OF RETURN IS CONSIDERED NECESSARY TO JUSTIFY INVESTMENTS IN CONSERVATION TECHNOLOGY; WHAT FUNDS EXIST FOR SUCH INVESTMENTS IN 1979? WHAT IS THE AGE OF EXISTING PHYSICAL PLANT? ANSWER: NO INVESTMENT OF THIS KIND WAS MADE IN 1977. THERE IS NO ASSET REPLACEMENT AT THE COMMERCIAL LEVEL. THE INVESTMENT MADE IS MODEST AND AT THE UNIVERSITY

LEVEL FOR RESEARCH AND SMALL DEMONSTRATION PROGRAMS. IT IS ESTIMATED TO TAKE TEN YEARS TO MAKE BACK EQUIVALENT CONVENTIONAL SYSTEM INVESTMENT PLUS OPERATING COSTS, FOR SUCH ENERGY FORMS AS SOLAR; HOWEVER AFTER THAT ELAPSED TIME, SOLAR ENERGY PRODUCTION IS VIRTUALLY FREE. RATE OF RETURN ON INVESTMENT SHOULD BE COMPARABLE TO OTHER SMALL BUSINESSES. SMALL PRIVATE COMPANIES (E.G. BRICK PRODUCTION, APARTMENT HOUSE CONSTRUCTION) SEEK AND ACHIEVE 100 PERCENT ROI AFTER TWO YEARS OF OPERATION: RISK FACTOR IS HIGH. TO ILLUSTRATE HIGH RISK: BRICKS WERE SELLING ONE YEAR AGO FOR DOLLARS FIFTY-FOUR PER THOUSAND. GOVERNMENT PEGGED RATE IS NOW UNCLASSIFIED

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LESS THAN HALF THIS FIGURE AND SUPPLY IS MEETING DEMAND. CEMENT SHORT TIME AGO COST UNDER DOLLARS EIGHT PER FIFTY KILO BAG. OFFICIAL RATE IS DOLLARS TWO WITH ACTUAL SELLING PRICE AT DOLLARS FOUR. HENCE, PRICING STRUCTURE REFLECTS HIGH VOLATILITY AND DOWNSIDE RISK FOR PRIVATE INVESTMENT CAPITAL, AT LEAST IN CONVENTIONAL PRODUCTS. INVESTMENT IN CONSERVATION TECHNOLOGY, IF ALTERNATIVE ENERGY SOURCES SUCH AS SOLAR AND WIND ENERGY ARE CONSIDERED PART OF THIS CATEGORY, REQUIRE GOVERNMENT INCENTIVES AND ACTIVE PARTICIPATION. FUNDS FOR GOVERNMENT INVESTMENT IN 1979 APPROXIMATE DOLLARS TWENTY-FIVE MILLION FOR SOLAR (INCLUDING WIND) RESEARCH AND DEVELOPMENT, UP FROM APPROXIMATELY DOLLARS FIVE MILLION THIS YEAR, OR FACTOR OF FIVE INCREASE. THESE ALTERNATIVE ENERGY INVESTMENTS, WHICH ARE VIEWED BY GOI AS MAJOR PART OF CONSERVATION TECHNOLOGY FOR IRAN ARE ONLY TWO YEARS OLD. PHYSICAL PLANTS, THEREFORE, ARE EITHER IN PLANNING, CONSTRUCTION OR INITIAL STAGES OF EVALUATION AND OPERATION. EXISTING CONVENTIONAL PHYSICAL PLANT

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AGE VARIES. IN GENERAL, HALF OF OPERATING STEAM GENERATING UNITS WERE COMMISSIONED FROM 1970 AND 1973 AND ABOUT HALF SINCE 1974; ALL GAS TURBINES HAVE BEEN COMMISSIONED SINCE 1974; HALF OF HYDRO INSTALLATIONS WERE MADE DURING 1960'S, WITH OTHER HALF ON LINE SINCE 1975.

Q.5. DISCUSS GOVERNMENT STANCE WITH RESPECT TO ENERGY CONSERVATION. WHAT PROGRAMS EXIST TO FOSTER CONSERVATION? ARE HARD FUNDS AVAILABLE FROM THE GOVERNMENT FOR INVESTMENT IN CONSERVATION TECHNOLOGY? IF SO, WHAT IS THE TIME SCHEDULE FOR DISBURSEMENT? WILL FOREIGN-SUPPLIED TECHNOLOGY QUALIFY?

ANSWER: GOI CONSIDERS NUCLEAR, SOLAR, WIND, AND OTHER NON-CONVENTIONAL ENERGY SOURCES TO REPRESENT CONSERVATION TECHNOLOGY ETHIC. GOI IS PUSHING NUCLEAR POWER AND USE OF NATURAL GAS TO CONSERVE OIL AND PROLONG PERIOD OF OIL EXPORTS. IMPROVEMENT IN INSULATION STANDARDS, EFFICIENCIES IN PLANT OPERATION, ETC., ALTHOUGH RECOGNIZED AS TRUE CONSERVATION METHODOLOGY, ARE NOT EMPLOYED NOR IS GOVERN-

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MENT PUSH ON INDUSTRY OBSERVABLE IN THIS DIRECTION. FOSTERING CONSERVATION, THEREFORE, IS REFLECTED BY GOI IN INCREASED RESEARCH MONEY ALMOST EXCLUSIVELY FOR DEVELOPMENT OF ALTERNATIVE NON-CONVENTIONAL TECHNOLOGIES. RESEARCH FUNDS PROVIDED BY GOI PER ANSWER Q.4 ABOVE (DOLLARS TWENTY-FIVE MILLION IN 1979), ARE ONLY FUNDS AVAILABLE AT PRESENT, ALTHOUGH BUDGET SHOULD GROW AS MORE DEMONSTRATION PROJECTS ARE INITIATED. SCHEDULE FOR DISBURSEMENT OF GOVERNMENT-SPONSORED RESEARCH IS ON YEAR-TO-YEAR BASIS WITHIN THE FRAMEWORK OF FIVE-YEAR DEVELOPMENT PLAN, FOREIGN TECHNOLOGY DEFINITELY QUALIFIES AND U.S. TECHNOLOGY IS OF INTEREST TO GOI, AS IS LOCAL MANUFACTURE.

2. GOI MINISTRIES OF ENERGY AND HEALTH AND SOCIAL WELFARE, SHARE THE POSITION THAT ALTERNATIVE ENERGY SOURCES SUCH AS SOLAR AND WIND POWER CAN MUCH IMPROVE LIVING CONDITIONS IN THE APPROXIMATELY SIXTY THOUSAND WIDELY-DISPersed SMALL VILLAGES IN IRAN. IMPROVEMENTS OF VILLAGE HEALTH AND LIVING STANDARDS IN TURN WILL LESSEN INTERNAL MIGRATION PRESSURES FROM VILLAGES TO URBAN LOCATIONS SUCH AS TEHRAN. EMBASSY SEES HIGH DEGREE OF CONVERGENCE, THEREFORE, BETWEEN ALTERNATIVE ENERGY RESOURCES DEVELOPMENT FOR DIFFUSE APPLICATIONS IN IRAN, AND EASING OF SOCIAL WELFARE AND POPULATION CONCENTRATION DIFFICULTIES OVER LONGER TERM. THIS IS GOI POSITION, BUT INTEGRATED FORMAL PROGRAM WITH THIS DUAL OBJECTIVE DOES NOT AT PRESENT EXIST.

3. IN RECENT DISCUSSION WITH GUEST LECTURER, DR. PAUL CRAIG, UNIVERSITY OF CALIFORNIA, SCIATT WAS ADVISED THAT HELPFUL REFERENCE ON THIS SUBJECT IS THE STUDY RELEASED MAY 1977 ON "ENERGY AND THE DEVELOPING NATIONS."

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THE STUDY WAS PREPARED BY PHILIP PALMEDO AS PART OF THE ENERGY ANALYSIS PROGRAM OF BROOKHAVEN NATIONAL LABORATORIES AT UPTON NEW YORK. EMBASSY WOULD APPRECIATE RECEIVING COPY OF THIS STUDY OR PORTIONS PERTINENT TO IRAN AND MIDEAST.
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